Sexually Transmitted Diseases

2013

Office of Disease Integration and Services

STD Control Program

2013 Annual Report

Division of Public Health Services

Office of the Assistant Director
Public Health Preparedness Services

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JANICE K. BREWER, GOVERNOR
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December 2014

Dear Arizonans:

The Arizona Department of Health Services (ADHS), Sexually Transmitted Disease Control Program (STDCP) is pleased to provide the 2013 Arizona STD Annual Report. This report highlights the impact of sexually transmitted diseases (STDs) among the residents of Arizona by focusing primarily on syphilis, gonorrhea, and chlamydia, the most commonly reported STDs. The following information, as depicted in the narrative, graphs, and tables, details the increasing number of STDs affecting our State. All 2013 data are from the ADHS STDCP Surveillance system.

STDs affect people of all ages, races, ethnicities, educational levels, and economic status. Sexually transmitted infections raise numerous concerns due to the fact that the majority of infections lack symptoms. STDs have the capacity to cause still-births, deformities in newborns, pelvic inflammatory disease, as well as the growing possibility of drug resistance in gonorrhea. Of greatest concern is that persons infected with an STD are up to five times more likely to become infected with HIV, if exposed. In 2013, young adults ages 15-29 and men who have sex with men bore a disproportionate burden of STDs in Arizona. The ADHS STDCP is addressing these health disparities by collaborating across ADHS programs and reaching out to county and tribal health departments, community based organizations, the Indian Health Service, the Centers for Disease Control and Prevention, and countless Arizona medical providers to promote STD prevention and intervention statewide.

In pursuit of the mission of the ADHS STDCP, through this report, our goal is to disseminate useful and pertinent data to the Arizona public and community leaders to promote dialogue about sexual health and disease prevention, to promote screening, medical treatment and services, and to improve the sexual health of all Arizonans. Sexual health is everyone's responsibility.

Please contact us with any further questions regarding STD education, prevention, and screening opportunities.

Sincerely,

Roxanne Ereth, MPH
STD Control Program Manager

Arizona Department of Health Services
Office of Disease Integration and Services
STD Control Program

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Kerry Kenney, CDC Senior PHA
Katherine Browne, CDC PHA
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Program Mission

The Mission of the Arizona Department of Health Services (ADHS) STD Control Program (STDCP) is to:

> Improve the sexual health of all Arizonans by strengthening the prevention and control of Sexually Transmitted Disease in Arizona through education, surveillance, collaboration, and program development.

Program Organizational Structure

The STDCP has been a part of the Arizona Department Health Services since 1919. The STDCP is under the ADHS Public Health Services Division, Bureau of Epidemiology and Disease Control, Office of Disease Integration Services (ODIS) under Ms. Carla Chee, MHS. ODIS is comprised of the HIV Surveillance Program, Tuberculosis Control Program, Refugee Health, HIV/AIDS Care and Services Program, and the STDCP. The STDCP Central Office is located in downtown Phoenix with field staff located in Maricopa and Pima Counties.

Program Staff and Contributors

The STDCP Central Office Staff:

Roxanne Ereth, MPH, BS, STDCP Manager with 16 years of experience in Public Health. Ms. Ereth's experience includes positions as an Epidemiologist, Manager of the Hepatitis C Program for 2 years and manager of the STDCP for the last 6 years. She has a BS in Microbiology and an MPH in Public Health with a Concentration in Community Health Practice.

Anita Betancourt, BS, Chlamydia Surveillance Epidemiologist, has 3 years of experience as the STD Infertility Prevention Project Coordinator, and 8 years as an Epidemiologist. Ms. Betancourt holds a BS in Health Sciences and a Graduate Certificate in Epidemiology.

Jose Mireles, MPH, Syphilis Surveillance Epidemiologist, holds a BS in Microbiology and an MPH in Public Health. Mr. Mireles has 6 years of experience as an STD Epidemiologist.

Lauren Young, MPH, Gonorrhea Surveillance Epidemiologist, has one year of experience as the Gonorrhea Surveillance Epidemiologist. She holds a BA in Chemistry and Spanish, an MPH with a concentration in Epidemiology and Biostatistics, and a Certificate in Interdisciplinary Women's Health.

Linda Ripley, Data Entry Specialist has been with ADHS since 2006.

Olivia Kitcheyan, Electronic Lab Reporting Entry Specialist, has been with ADHS for one year.

The Centers for Disease Control and Prevention (CDC) has been generous in its support of the ADHS STDCP by providing assistance from the following on-site staff:

Melanie Taylor, MD, MPH, CDC Medical Epidemiologist in the Division of STD Prevention at the National Center for HIV, STD, Hepatitis and TB Prevention (NCHHSTP) since 2002. She is an infectious disease/HIV physician and a Captain in the United States Public Health Service.

Kerry Kenney, BA, CDC Senior Public Health Advisor with 22 years of experience working in state and local STD Programs (City of Chicago, County of Los Angeles, and State of Arizona). He holds a BA in Economics and a Graduate Certificate in Public Health with emphasis in Public Health Policy.

Katherine Browne, BA, CDC Public Health Advisor with 23 years of experience working in state and local STD Programs (County of Los Angeles, State of Indiana, and State of Arizona – Maricopa County and Pima County STD Programs). Ms. Browne holds a BA in Human Biology.

Geri Toyekoyah, MPH, BA, CDC Public Health Advisor with 22 years of experience working in state and local STD Programs (States of Florida, Louisiana, North Carolina, Oklahoma, Mississippi, and Arizona). She holds a BA in History and an MPH specializing in Public Health Administration and Policy.

Purpose

The purpose of this report is to highlight the impact of sexually transmitted diseases (STDs) among the residents of Arizona. The information depicted in the narrative, graphs, and tables herein focus on chlamydia, gonorrhea, and syphilis, the most commonly reported STDs affecting our state. Data are from the ADHS STD Surveillance system, 2013 CDC Surveillance Report, and the CDC website, cdc.gov. They include all reported cases of STDs in Arizona during 2013.

Executive Summary

Arizona is comprised of fifteen counties and is home to twenty-one federally recognized American Indian tribes. The ADHS STDCP conducts and is responsible for all surveillance, data analysis, and program evaluation of STD activities in Arizona. The ADHS STDCP epidemiologists monitor disease trends across the state and seek to identify common risk factors and disparities among the affected populations. These activities help to detect unusual trends or outbreaks early so that guidance can be offered to local health departments (LHDs) or Tribes affected. In addition, the STDCP provides epidemiological, technical, medical, and programmatic consultation services to all health care providers throughout the state.

The LHDs provide STD control activities through direct clinical care, including testing and treatment; conduct individual case investigations; provide partner services and referrals; and collaborate with community-based organizations to conduct community outreach and educational activities. They also coordinate with medical providers and correctional health staff members within their jurisdiction to provide STD testing and treatment services.

Arizona had consistently been in the top five states for congenital syphilis rates during 2001-2007. Arizona reported the highest rates of congenital syphilis annually for 2001 through 2005, and was ranked number 2 in the nation for 2007. Arizona has brought this number down considerably, although our state still ranks 7th in the nation for its high rates. Because of this, in accordance with Arizona statute, the Arizona State Public Health Laboratory provides free syphilis testing for a mother's first prenatal visit, and Maricopa County has issued a board order requesting a third trimester blood test for syphilis in all pregnant women. It requires a blood test for newborns or their mothers at the time of delivery and, requires a blood test for syphilis on the mother or umbilical cord of a stillborn infant.

Although there are multiple sexually transmitted diseases, Arizona requires reporting for only five of them: syphilis, gonorrhea, chlamydia, herpes genitalis (provider only), and chancroid. This 2013 Arizona STD Annual Surveillance Report provides descriptive data for Chlamydia, Gonorrhea and Syphilis infections.

In 2013, a total of 37,924 cases of STDs were reported in Arizona. The majority of the cases were reported from Maricopa (63.9%), Pima (16.2%), Pinal (4.0%) and Yuma (2.5%).

- 1.2% of investigated cases were co-infected with HIV.
- 3.96% of investigated cases were men who have sex with men (MSM).
- 79.5% of all reported cases were young adults 15 – 29 years of age.
- 13 congenital syphilis cases were reported.

Border Health Activities

The STDCP is collaborating with the ADHS Office of Border Health by developing a protocol to ensure that the Mexican National cases diagnosed in Arizona and their contacts are appropriately provided treatment and partner services. This collaboration aims to the reduce of reinfection and the possibility of further transmission of STDs both in Mexico and Arizona.

Partner Services

Partner Services is an STDCP priority. Partner Services includes case investigation through contact tracing, an essential component of STD control. Case investigations provide for the notification, counseling, and referral for testing and treatment for all persons associated with or exposed to an STD. Partner Services facilitates new case finding that allows for early detection and treatment of new infections, thus preventing the further spread of STDs. The LHDs and Indian Health Services (IHS) facilities are responsible for providing Partner Services activities within their respective jurisdictions.

Partner services are provided for all syphilis cases. In 2013, 498 cases of early syphilis were reported. All 498 of the early primary and secondary syphilis cases were investigated and an interview was attempted for each case. Of these early syphilis cases, 373 partners were investigated. During an investigation, attempts are made to notify the partner of possible exposure to refer them for testing and treatment.

Collaborations

To address identified risk factors, emerging public health threats, and disparities, the STDCP collaborates with many partners to achieve its mission. The STDCP provides case and lab surveillance; partner services assistance during case investigations and contact tracing; clinical guidance and medical training; STD prevention training; technical and capacity building assistance; and provides regular program updates to partners.

The STDCP has long standing collaborative relationships with the 15 LHDs, IHS, and Tribal Health service providers across Arizona. The STDCP maximizes resources by collaborating with other ADHS programs serving the same communities. These programs include the HIV/AIDS Surveillance and Prevention Programs; the Office of Women's and Children's Health; the Office of Health Disparities; the Bureau of Health Systems Development; the Division of Behavioral Health; the Office of the Tribal Liaison, and the State Public Health Laboratory. The STDCP partners with other State and local agencies including the Arizona Department of Education, the Arizona Department of Corrections, the Arizona Department of Youth Corrections, the Maricopa County Department of Public Health's Laboratory, and the Maricopa County Correctional Health Services.

The STDCP prevention efforts focus on high risk adolescents and MSM in the Hispanic, African American, and Native American communities. The STDCP collaborates with community-based organizations such as the Arizona Family Health Partnership (AFHP) and TERROS. AFHP conducts activities related to the chlamydia screening in sexually active young women under the age of 25, and the sexual health of adolescents and young adults. Another community based organization, TERROS, targets their prevention activities to MSM for testing, education and screening.

With an emerging resistance to all effective drugs used to treat gonorrhea infections, as well as increasing numbers of reported infections, the STDCP has made significant efforts to monitor infections and assess drug susceptibility in Arizona. Maricopa County Department of Public Health's Laboratory has participated in the CDC's Gonococcal Isolate Surveillance Project (GISP) for several years. The lab serves as a sentinel site for the detection of potential drug resistant strains in Maricopa County. Through collaboration with Maricopa County Department of Health, the county's public health laboratory and the CDC, the STDCP monitors trends in antimicrobial resistance and susceptibility.

STDs in Arizona

STDs affect people of all ages, races, ethnicities, educational levels, and economic status. However, in 2013, young adults ages 15-29 and men who have sex with men bore a disproportionate burden of STDs in Arizona.

STD Surveillance

The STD burden among Arizona residents is high and disproportionately affects certain high risk groups. In 2013, 37,924 total STD infections (excluding HIV), were reported in Arizona:

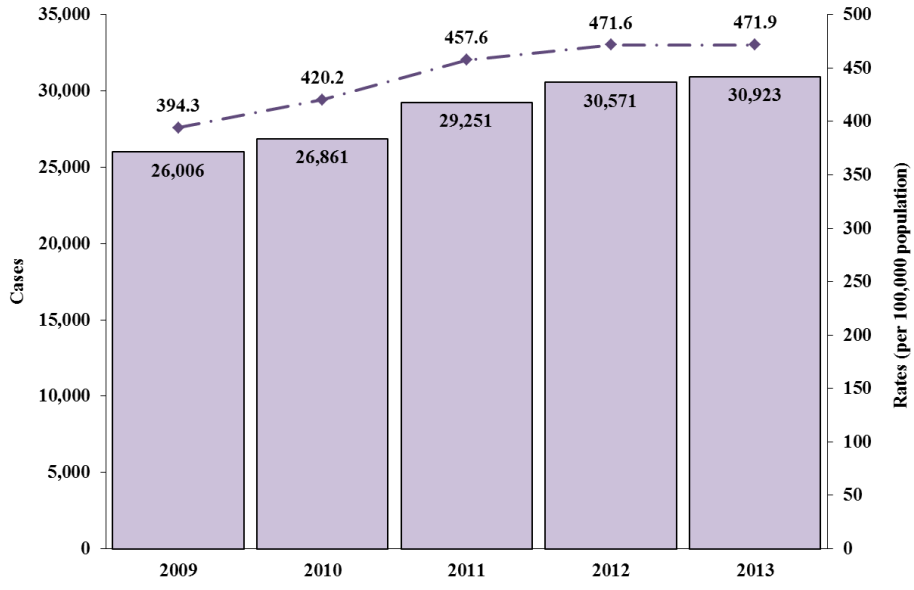
- 30,923 cases of chlamydia were reported in 2013, a 1.15% increase from 2012.
- 6,503 cases of gonorrhea were reported in 2013, an 11.0% increase from 2012.
- 290 cases of primary and secondary syphilis were reported in 2013, a 23% increase from 2012.

Epidemiologic Summaries

Chlamydia

Chlamydia is the most commonly reported sexually transmitted bacterial infection across the United States. In 2012, there were just over 1.2 million chlamydia infections reported nationwide. This is the largest number of cases ever reported to CDC for any infection. The vast majority of chlamydial infections are asymptomatic. When left untreated, these infections are considered major causes of Pelvic Inflammatory Disease (PID), ectopic pregnancy, and related infertility among women in Arizona and the United States[1]. These undiagnosed STDs cause 24,000 women to become infertile each year.

Figure CT 1: Reported Chlamydia Cases and Case Rates, Arizona 2009-2013



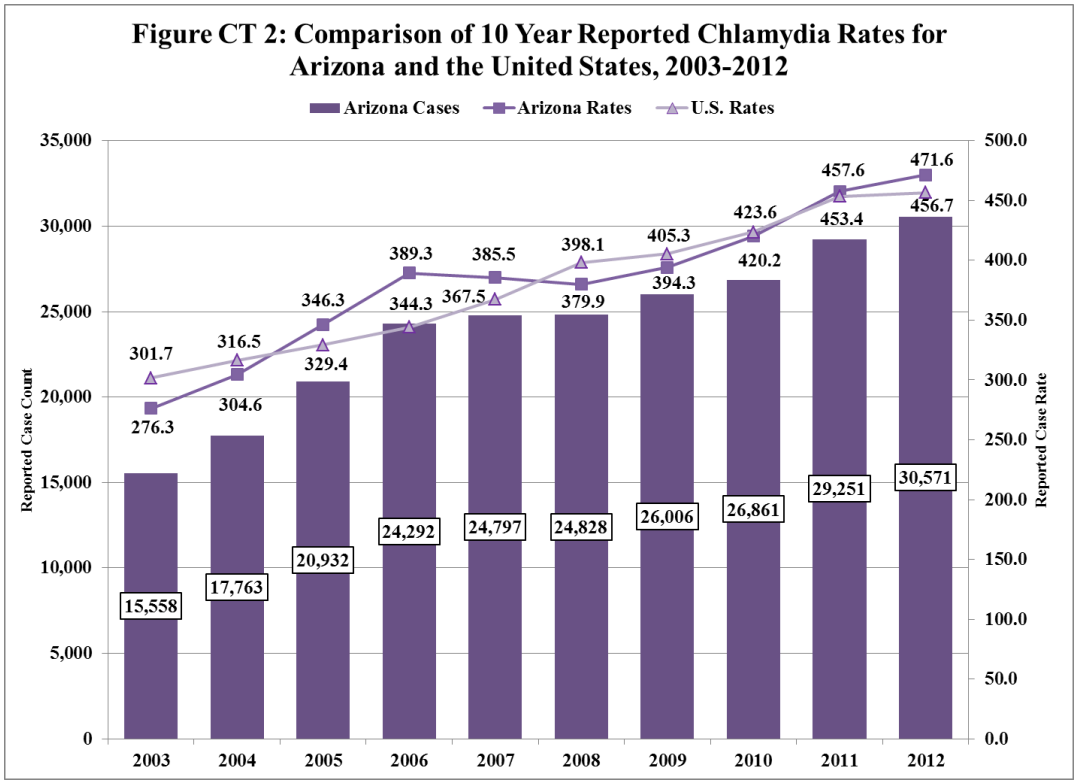
Data is provisional and subject to change.

Statewide Disease Burden:

Reported chlamydia cases and rates in Arizona have steadily increased over the last decade, mirroring national chlamydia trends. Data from 2013 indicate a slight increase in cases and rates from 2012 (Figure CT 1). The number of cases reported in 2013 increased only by 1.15%, 352 cases over the number of cases reported in 2012. The case rate increased by 0.06%. This is the smallest increase in both cases and rates seen in 5 years. Trends demonstrating increasing infection rates in Arizona cannot be viewed independently of population changes the state has undergone over the last 13 years. While infection rates for some subgroups groups may be influenced by the preliminary

[1] Vranic, Sabina Mahmutovic. (2012). Chlamydia trachomatis infections of the adults. *Edited by Nancy Mallal, 31.*

population decrease between 2009 and 2010, the general population increases observed statewide from 2010-2013 mitigates the possibility of superficially high infection rates.



10 Year Trend:

Over the last decade, Arizona chlamydia case rates continue to mirror nationwide trends. In 2012, Arizona's case rate for chlamydia, 471.6 per 100,000, exceeded the U.S. case rate of 456.7 per 100,000 by 3.3% (Figure CT 2). This is the greatest increase over the U.S. rate seen in 4 years. In 2010 and 2011, Arizona case rates were less than 1% higher than the reported U.S. rates. As Sexually Transmitted Disease Surveillance 2012 indicates, "The increase in reported infections over the last 20 years reflect the expansion of chlamydia screening activities, the use of increasingly sensitive diagnostic tests, an increased emphasis on case reporting from providers and labs, and improvements in the information systems used for reporting"[2].

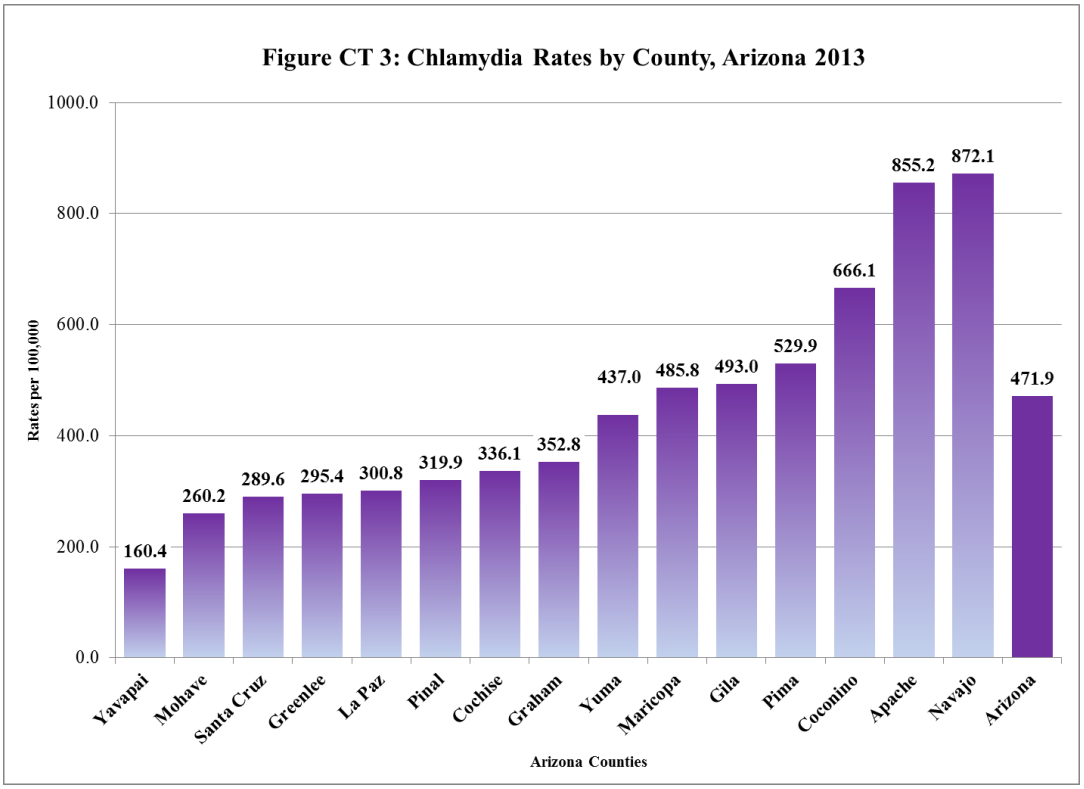
Current Trends:

Arizona appears to be experiencing a plateau of cases in both count and rate. Preliminary data reveal this could be a beginning of a trend nationwide. In 2012, U.S. case counts

[2] Centers for Disease Control and Prevention. Sexually Transmitted Disease Surveillance 2012. Atlanta: U.S. Department of Health and Human Services; 2013.

decreased 0.7%, which is the smallest decrease in case count seen in 5 years[3]. As previously mentioned, the slight increase in case count observed in Arizona from 2012-2013 (0.6%) may indicate a new trend. Although the increase is slight, continued increases could potentially be the result of the expansion of chlamydia screening activities statewide. These screening activities continue to be a priority for the Arizona Chlamydia Advisory Group, which collaborates with Title X, Title V, selected correctional facilities, and other safety net clinics. This group meets quarterly to discuss screening, treatment, and retesting activities, specifically targeting high risk populations across the state.

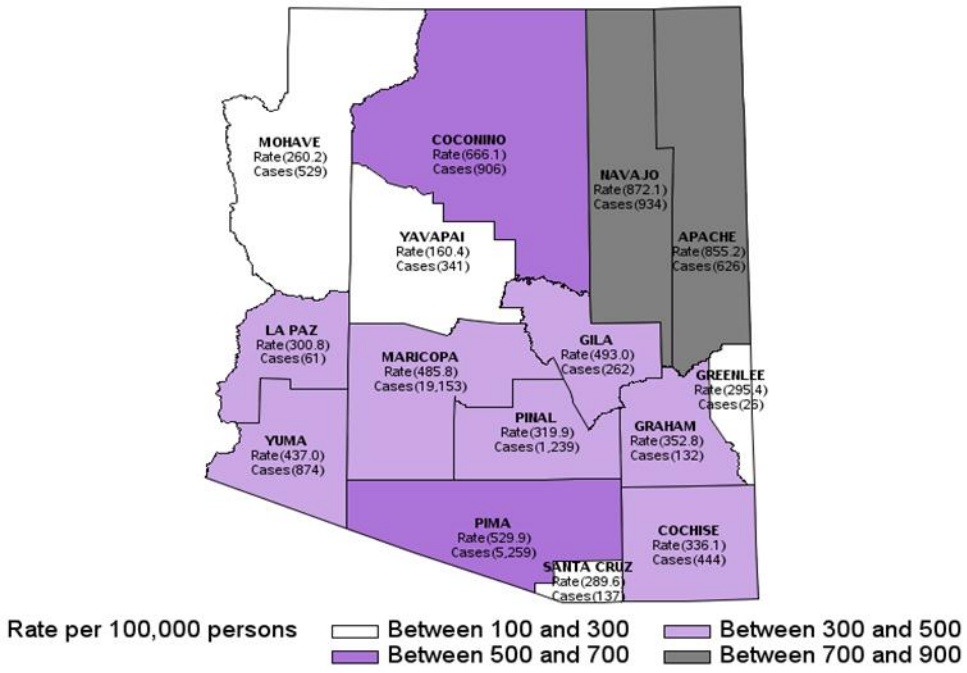
[3] Centers for Disease Control and Prevention. Sexually Transmitted Disease Surveillance 2012. Atlanta: U.S. Department of Health and Human Services; 2013.

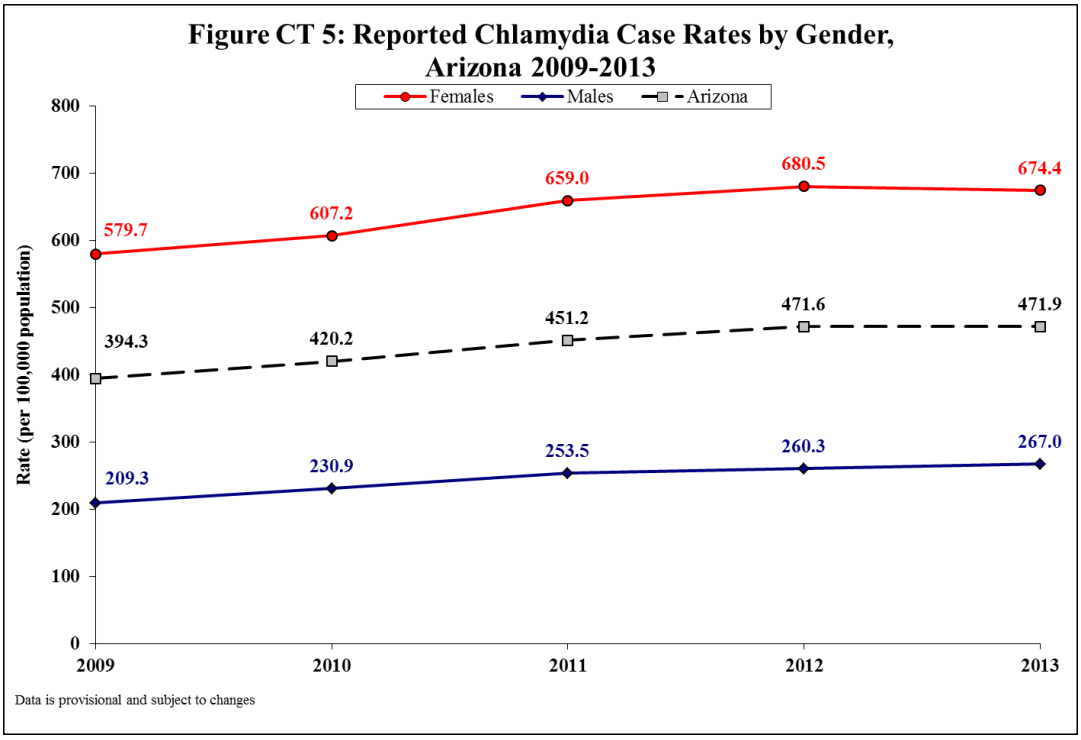


Rates by County:

Growth in case count and rate varied by county across the State between 2012 and 2013, with only 7 out of 15 counties showing an increase in cases. Despite the variation in case count increases and decreases, 40% of Arizona counties had case rates higher than that of the State (Figure CT 3). Although the two most populous counties, Maricopa and Pima, were among those with case rates higher than the state average, Navajo and Apache Counties actually had the highest case rates. Navajo County, reported the highest case rate in 2013, 872.1 per 100,000. This is only 23 cases more than what was reported in 2012. This rate is 85% higher than the state rate of 471.9 per 100,000, but has to be taken into the context of overall contribution to state morbidity. Navajo, Apache and Coconino counties represent roughly 5% of the Arizona population while contributing 8% of Arizona's chlamydia morbidity.

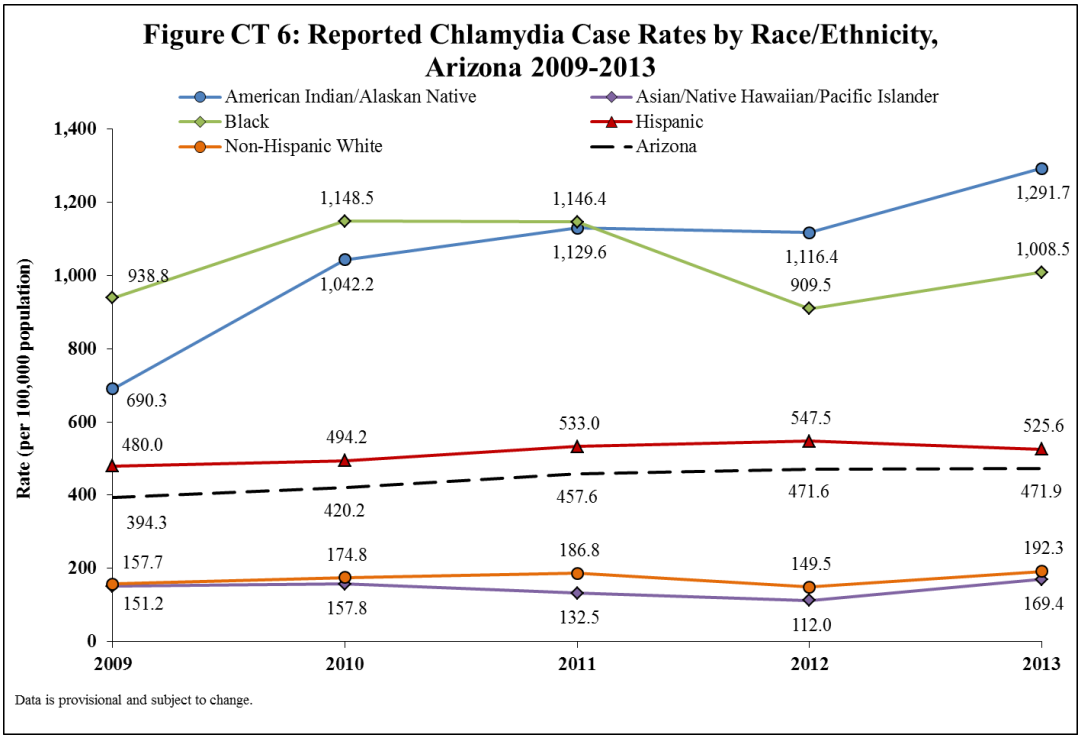
Figure CT 4: Chlamydia Rates and Cases by County, Arizona 2013





Rates by Gender:

Similar to nationwide trends, Arizona's females are disproportionately affected by chlamydia (Figure CT 5). From 2009-2013, chlamydia rates have tended to be around three times higher in females than in males. In 2013, the female case rate of 674.4 per 100,000 showed a slight decrease by 0.9% from 680.5 per 100,000 in 2012. This is the first decrease in rate among females since 2007. Although this decrease is slight, the female rate is 2.5 times higher than the male rate and 1.5 times higher than the rate of Arizona. Contrary to previous years, 2013 is the first year where the female rate has decreased and the male rate continues to increase.



Rates by Race/Ethnicity:

There is a clear health disparity when looking at chlamydia rates in Arizona by race/ethnicity (Figure CT 6). American Indians/Alaskan Natives (AI/AN) and Blacks have maintained the highest rates of chlamydia from 2009-2013. In 2013, the AI/AN rate was the highest reported rate at 1,291.7 per 100,000. This is a 15.7% increase in rate from 2012 and an 87% increase in rate from 2009. The number of cases among AI/AN increased 18% (538 cases) from 3,030 in 2012 to 3,568 in 2013. AI/AN maintain the 3rd highest count of chlamydia cases in Arizona and represent 11.5% of the reported cases; however, American Indians comprise only 4.2% of Arizona's population.

In 2013, the rate of chlamydia among Blacks was the second highest, reported at 1,008.5 per 100,000. This is a 10.8% increase in rate from 2012. Reported chlamydia cases among the Black population increased 14% from 2,535 cases in 2012 to 2,891 cases in 2013.

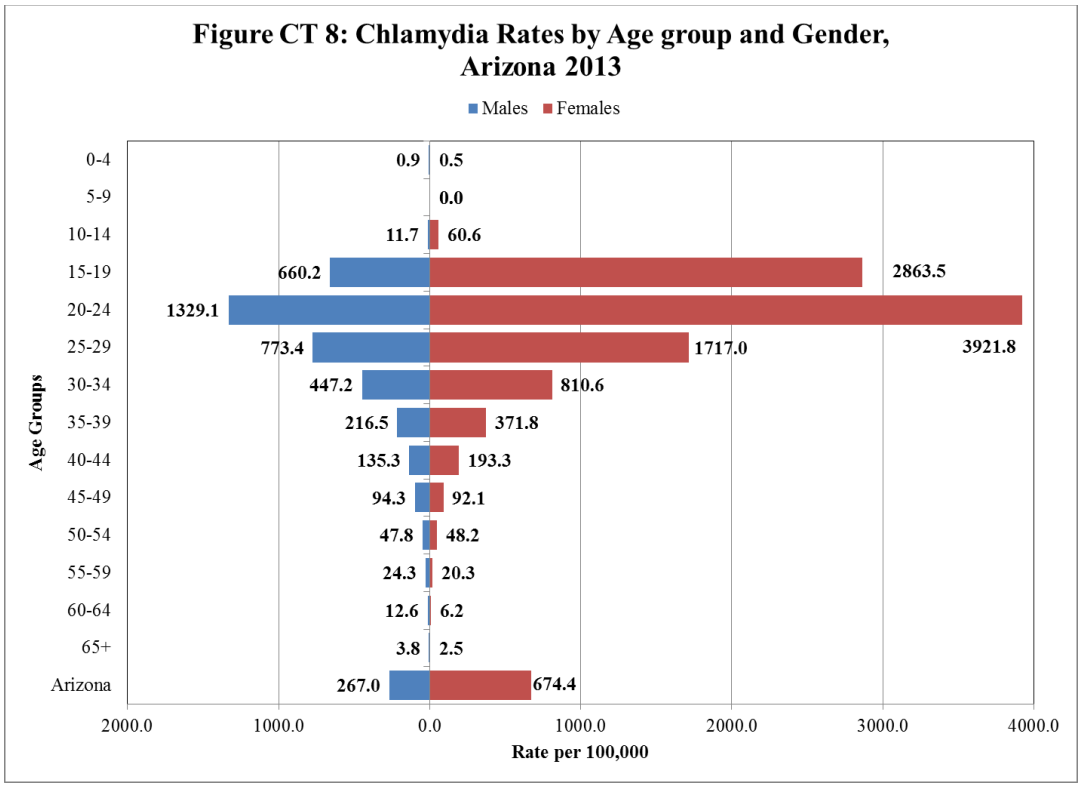
Although the AI/AN case rate was the highest reported rate in 2013, the Hispanic population had the highest count of reported cases at 10,386, 287 fewer cases than in 2012. The Hispanic population comprises 30% of Arizona's population and had the 3rd highest rate of chlamydia at 525.6 per 100,000.

It is important to note that roughly 30% of reported chlamydia cases had missing race/ethnicity data. This may have a substantial impact on race-based statistics and conclusions that may be drawn from them.

Table CT 7: Reported Chlamydia Cases and Case Rate per 100,000 Population by Age Group, Arizona 2009-2013						
	2013		2012		2011	
Age group	**N**	**Rate**	**N**	**Rate**	**N**	**Rate**
10-14	162	35.7	226	49.9	241	53.7
15-19	7,737	1727.7	8,671	1923.8	8,857	1,918.8
20-24	12,231	2578.0	11,781	2542.4	11,032	2,492.6
25-29	5,456	1229.1	5,131	1156.4	4,726	1,074.1
30-34	2,713	625.2	2,372	555.5	2,220	532.8
35-39	1,189	293.2	1,252	308.2	1,085	261.0
40-44	690	164.0	664	159.8	515	126.6
45-49	384	93.2	371	88.6	298	69.8
50-54	205	48.0	158	37.3	139	33.5
55-59	88	22.2	79	20.5	64	17.1
60-64	34	9.2	32	8.6	28	8.0
65+	30	3.1	31	3.4	28	3.2
Total	30,923	471.9	30,768	474.9	29,233	457.6
Percent under 25	65%		67%		69%	
Percent under 30	83%		84%		85%	
*Ages 0-9 not shown, Arizona rate reflects all ages						

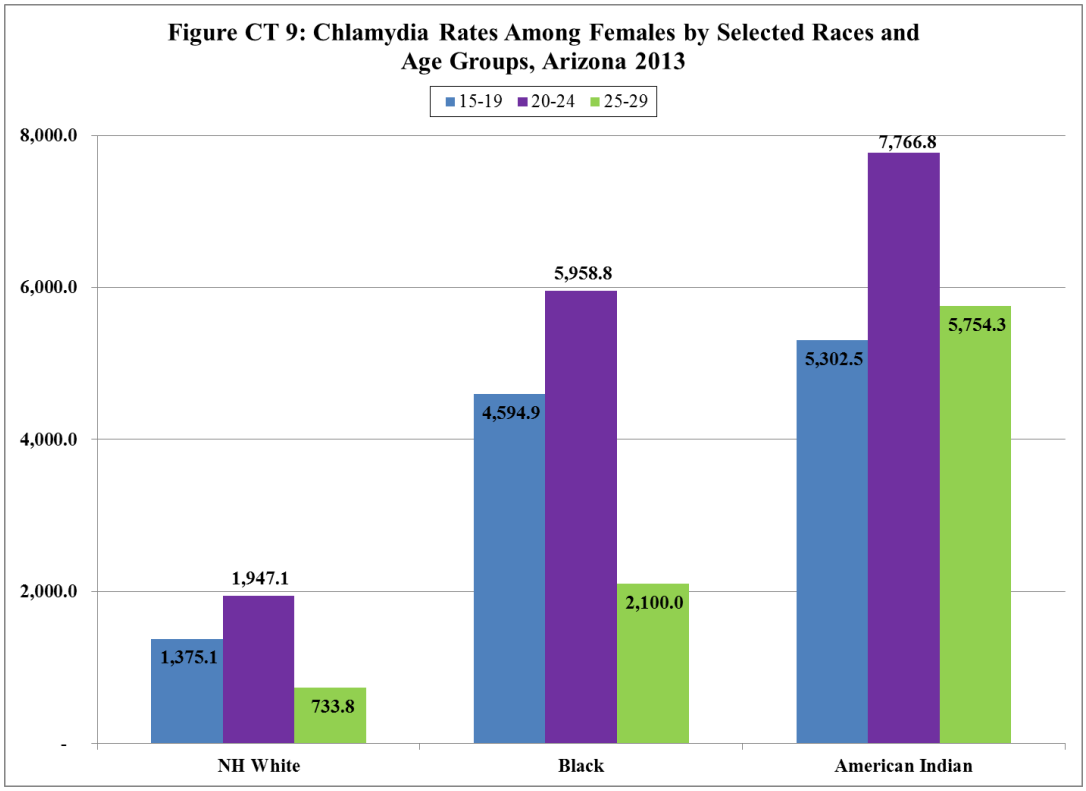
Rates and Cases by Age:

Adolescents and young adults in Arizona continue to be disproportionally affected by chlamydia (Figure CT 7). Closer examination of the rates among young people ages 15-24 reveal a rate of 2,165.1 per 100,000, which is 4.5 times higher than the rate of the state, at 471.9 per 100,000. The rate among 20-24 year olds remains the highest in the state at 2,578 per 100,000. In 2013, 65% of reported chlamydia cases were under the age of 25, and 83% of cases were under the age of 30.



Rates by Age Group and Gender:

While Arizonans aged 20-24 had higher case counts and rates than any other age group, differences were observed by gender within this group. Females within this age range had a case rate nearly 6 times higher than the rate of all women with chlamydia in Arizona (3,921.8 versus 674.4 per 100,000) and 3 times higher than men in the same age category (1,329.1). As a point of reference, in 2012 the U.S. chlamydia case rate among females age 20-24 was 3,695.5 per 100,000. In terms of contribution to overall morbidity, 20 to 24 year olds females alone made up 29.0% of all reported chlamydia cases in 2013.



Rates by Gender, Race, and Age:

Further analysis of chlamydia infection among young White, AI/AN, and Black populations females demonstrates disproportionately high rates among those between the ages of 20 and 24 years (Figure CT 9). In 2013, AI/AN females aged 20-24 yielded the highest rates of chlamydia among any demographic in Arizona, at 7,766.8 per 100,000. This rate is nearly 4 times higher than the rate among the Non-Hispanic White female population of the same age, with a rate of 1,947.1. Despite the differences observed in case rate, it is important to note that AI/AN females in this age range contributed 11.4% of cases among females aged 20 to 24, compared to the 24.3% non-Hispanic White females contributed. For comparison, the 2012 chlamydia rate among 20-24 year old AI/AN females nationwide was 5,309.5 per 100,000.

The second highest chlamydia rate for any Arizona demographic was observed among Black females, ages 20-24 at 5,958.8 per 100,000. This demographic comprises 8% of the cases among females 20-24 years old. Conversely, the rate among Black females ages 20-24 in the U.S. in 2012 was much higher at 7,836.3 per 100,000.

It is important to note that a large percentage of race data is missing. Nineteen percent of all reported chlamydia cases have unknown race and/or ethnicity missing race/ethnicity (including persons of mixed heritage) data for 2013 and this must be factored into any conclusions drawn from race-based statistics.

Gonorrhea

Gonorrhea is caused by the bacterium *Neisseria gonorrhoeae.* It is the second most commonly reported infectious disease in the United States and the state of Arizona. Despite the high number of reported gonorrhea infections, the CDC states that reported numbers represent roughly 33% to 50% of all new infections on an annual basis, which is attributed to the asymptomatic nature of the infection.

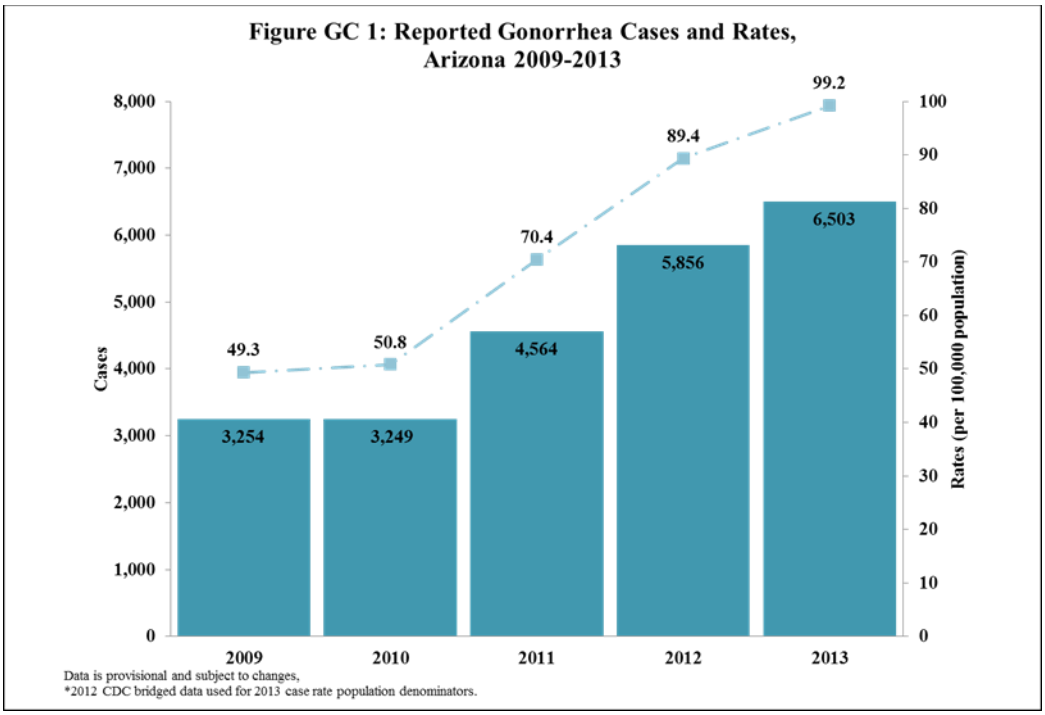
Gonorrhea has received widespread attention due to the seriousness of preventable morbidities associated with chronic untreated infections, such as pelvic inflammatory disease, premature delivery and neonatal blindness among pregnant women and infants, and infertility in men and women. Untreated and repeat gonococcal infections have also been linked to increased risk of transmission of HIV for those co-infected with both diseases, as well as increased risk of HIV acquisition among the non-infected.[4]

Gonococcal infections can manifest in diverse sites (pharyngeal, anal and urethral/cervical), although genital infections are the most commonly examined and reported. Numerous studies have indicated that a significant proportion of gonorrhea infections would remain undetected if clinicians rely solely on genital-based testing among high-risk populations, such as adolescents and MSM, and persons with a history of gonorrhea infection. Significant efforts have been made to encourage sexual history incorporation into screening practices, ensuring that all potential sites of infection are detected.[5],[6]

[4] Murray, P.J., Braverman, P.K., Adelman, W. P., Breuner, C.C., Levine, D.A., Marcell, A.V., O'Brien, R.F. & Burstein, G.R. (2014). Screening for Nonviral Sexually Transmitted Infections in Adolescents and Young Adults. *Pediatrics, 134*(1), e302-e311.

[5] Klausner, J.D., Kohn, R., & Kent, C. (2004). Etiology of clinical proctitis among men who have sex with men. *Clinical infectious diseases, 38*(2), 300-302.

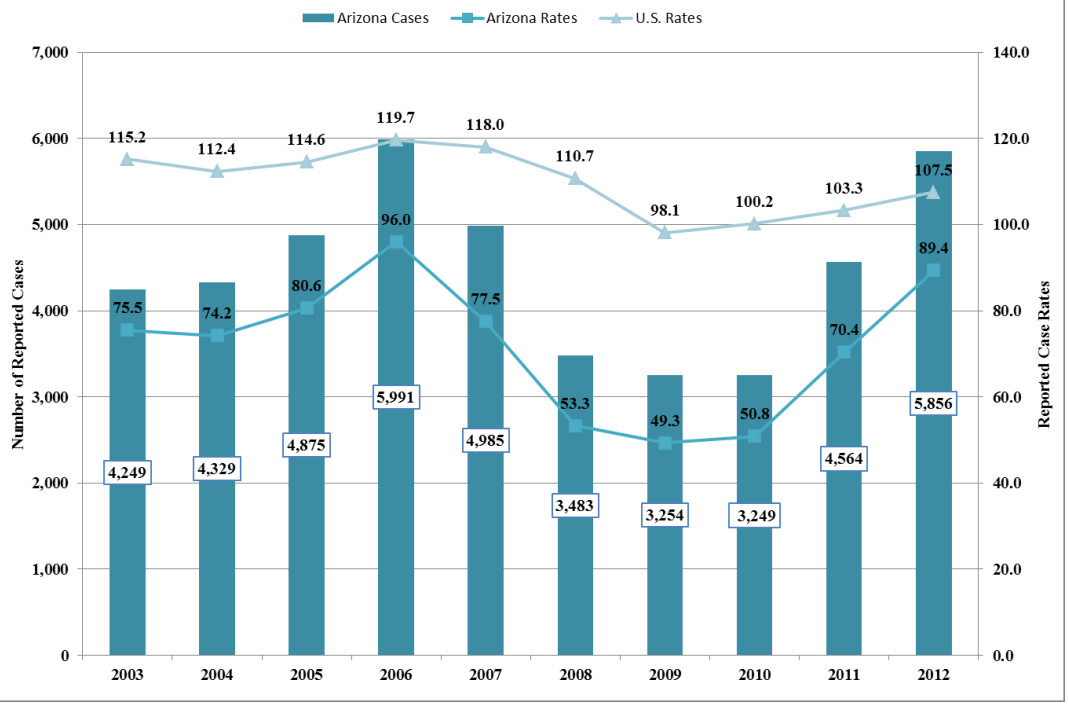
[6] Peters, R.P., Nijsten, N., Mutsaers, J., Jansen, C.L., Morré, S.A., & van Leeuwen, A.P. (2011). Screening of oropharynx and anorectum increases prevalence of Chlamydia trachomatis and Neisseria gonorrhoeae infection in female STD clinic visitors. *Sexually transmitted diseases, 38*(9), 783-787.



Current Trends:

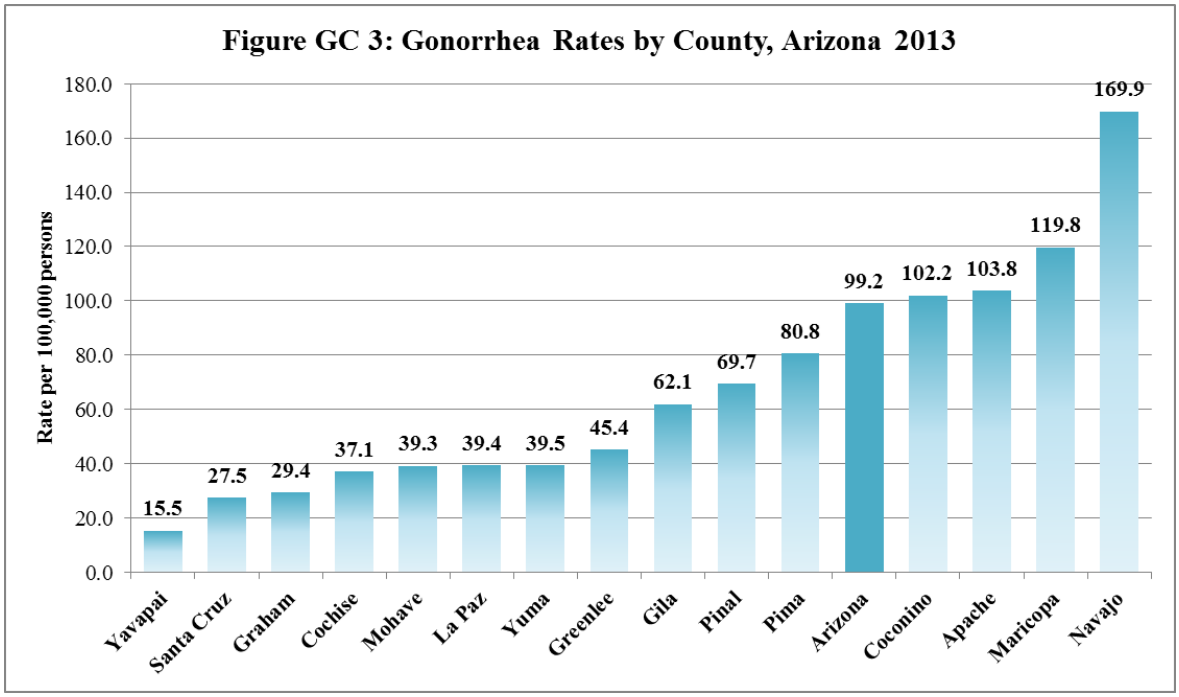
Over the last five years, counts and rates of reported gonorrhea infections have significantly increased in the state of Arizona (Figure GC 1). The number of reported infections doubled from 3,254 in 2009 to 6,503 in 2013 (99.8% increase), while reported case rates have also doubled within the five year time frame, from 49.3 per 100,000 persons in 2009 to 99.2 per 100,000 persons in 2013 (101.0% increase). The greatest annual increase in reported cases and case rates was observed between 2010 and 2011, where the number of reported cases increased by 1,315 (40.5% increase), and the case rate increased by 19.6 cases per 100,000 persons (38.6% increase). Although the rate at which cases are increasing has slowed from 2010 to 2013 (increase of 647 cases, 11.0% increase from 2012-2013), there are no present indications that reported infections will plateau or decline in the near future.

Figure GC 2: Comparison of 10 Year Reported Gonorrhea Rates for Arizona and the United States, 2003-2012



10 Year Trend:

Compared to the national trends for reported gonorrhea, Arizona rates have largely mimicked the increases and decreases observed nationwide over the last ten years (Figure GC 2). Although the State's reported infection rate was less than the national rate in 2012 (89.3 vs. 107.5), the percent increase in rate observed from 2009 to 2012 was 81.3% for Arizona vs. 9.6% for the U.S., indicating that Arizona's reported infection rate may surpass the national rate if current trends persist. However, it is important to contextualize reported infections in Arizona within the national background, with Arizona ranking 24th nationwide for reported case counts and rates, and making up 1.75% of the 334,826 cases reported nationwide in 2012.

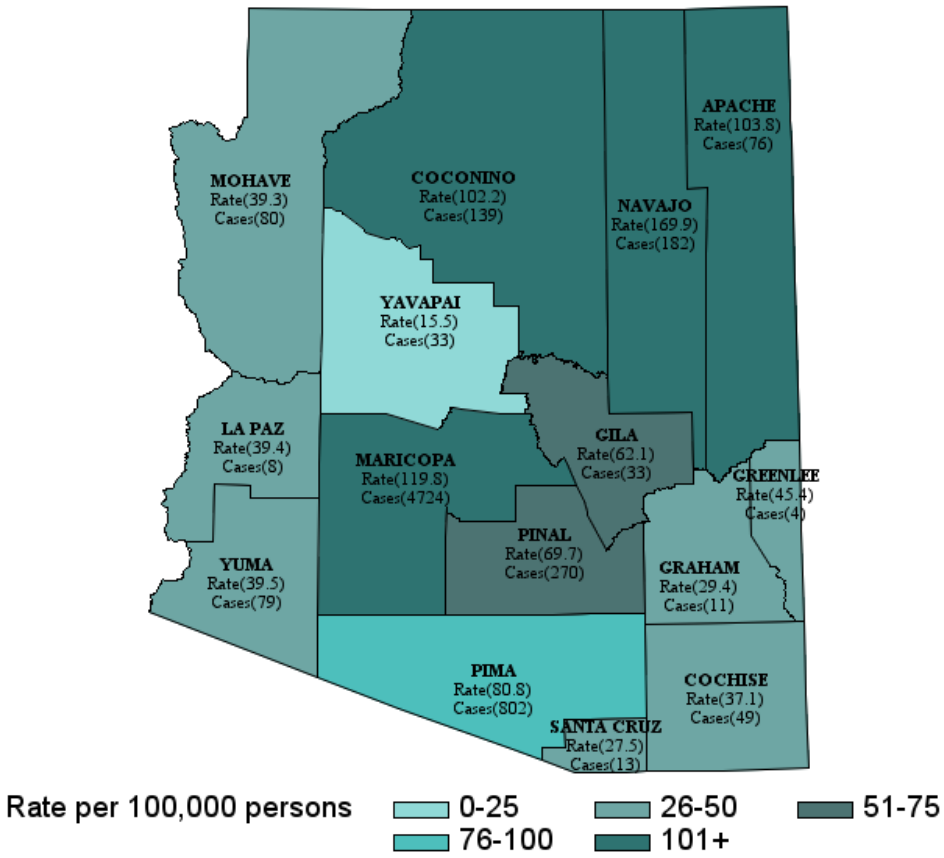


Statewide Disease Burden:

Reported gonorrhea infections emulate the population distribution of the state, with over 85% of cases reported in Maricopa and Pima Counties, which comprise 75.3% of the State's population. Maricopa County ranked 8th among counties/independent cities in the U.S. for reported gonorrhea cases in 2012, which underscores the impact this population center has on statewide and nationwide trends. From 2009-2013, the rural counties have represented an average of 16.8% of all Arizona cases.

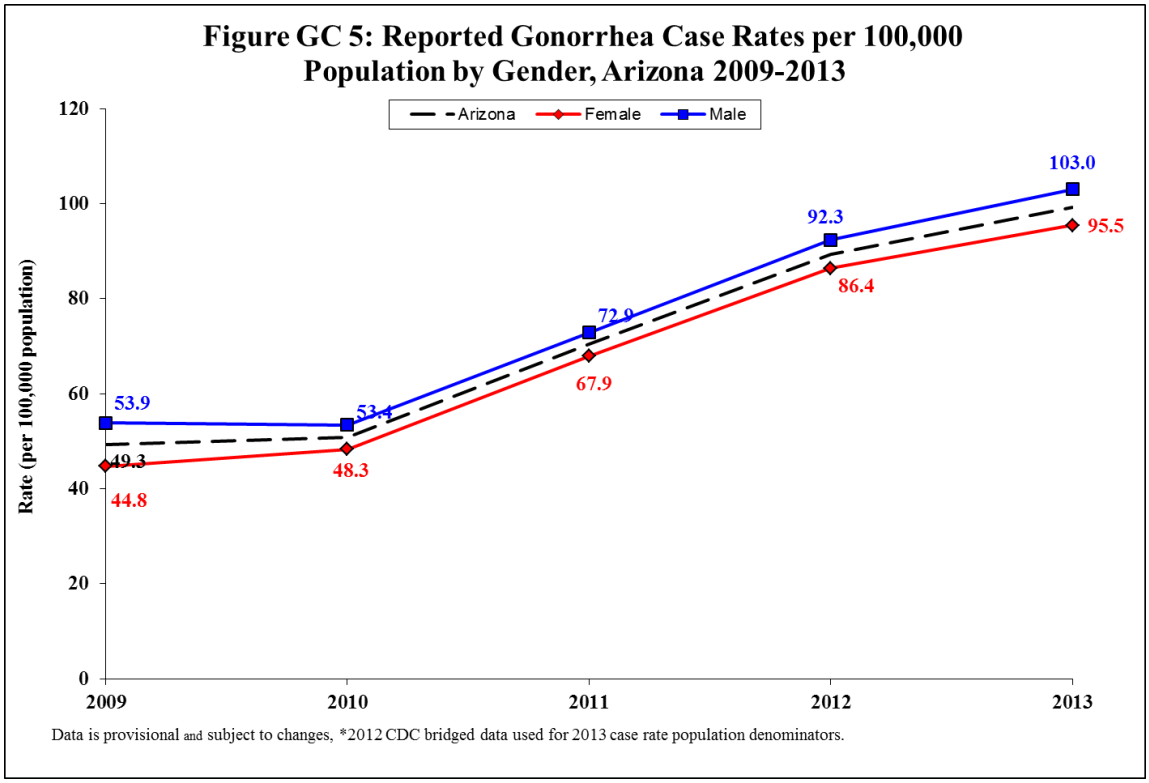
Though disease burden is heavily concentrated in metropolitan counties in Arizona, rural counties have experienced significant growth in both case count and rates over the last five years. The highest rate of reported infection among Arizona counties in 2013 was found in Navajo County (169.9 cases per 100,000 persons), although infections in this county only accounted for 2.8% of all Arizona infections (Figure GC 3). It is important, however, to note that many of the rural counties have experienced percent increases in case count much higher than Maricopa or Pima Counties. Consequently, while rural counties may not significantly contribute to overall increases in statewide morbidity, they have experienced sufficient county-level case increases to warrant attention.

Figure GC 4: Gonorrhea Rates and Cases by County, Arizona 2013



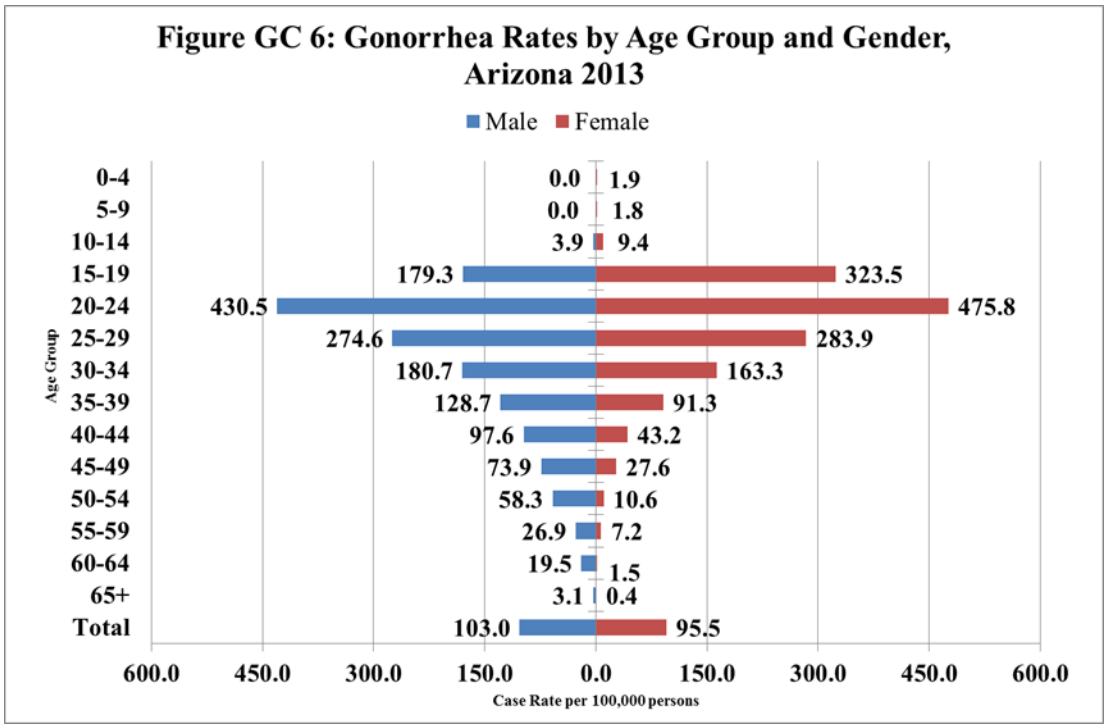
Case Counts and Rates by Gender, Age, and Race:

Gonorrhea infection has persistently affected various groups within Arizona's population in a disparate manner. Significant differences in case count and rate have been observed among differing age groups, gender, as well as racial/ethnic groups.



Rates by Gender:

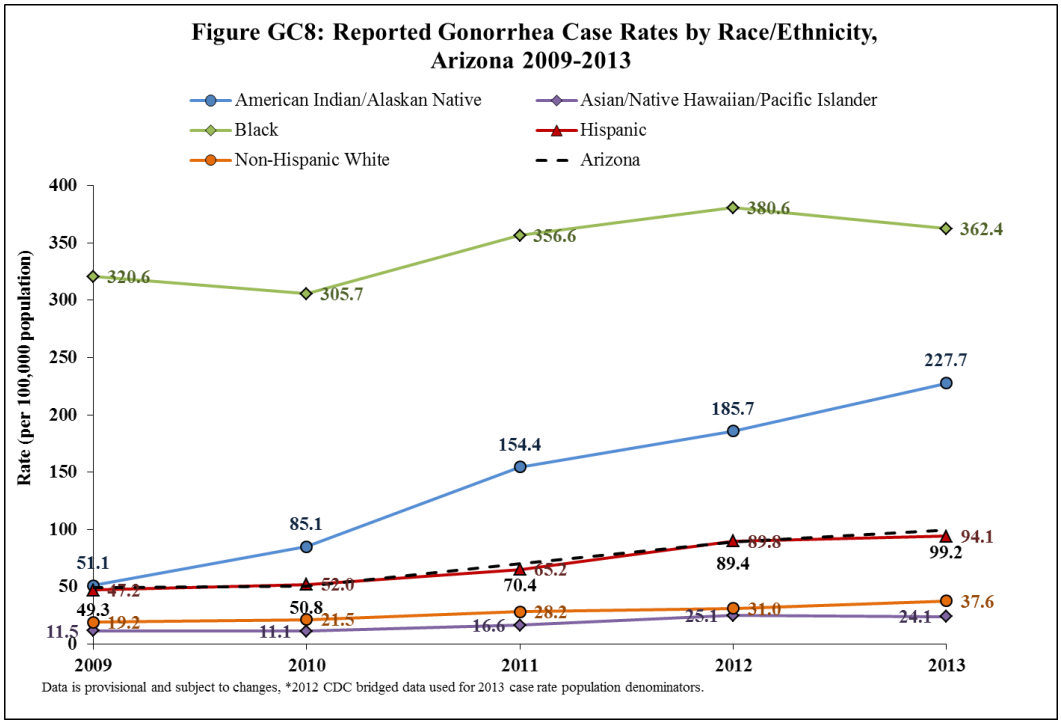
Male-dominated morbidity has been the observed norm on the national scale until roughly 2001, and in Arizona male-dominated morbidity has been a sustained trend, though the magnitude of the gender-based infection disparity has increased and decreased over time. As recently as 2001, there was a rate difference of roughly 20.0 cases per 100,000 persons comparing males to females, though the rate difference has decreased to 7.5 cases per 100,000 in 2013. While infections among males have maintained a small majority from 2009 to 2013 (54.7% to 51.6%), the percent increase of cases among females during the same time period has grown significantly compared to that of males (113.3% vs. 88.7% increase). Though it is difficult to ascertain whether or not female case counts and rates will continue to parallel or eventually surpass those of males in the near future, the large increase in female counts and the reduction of rate differences between genders emphasize the growing contribution females are making to overall gonorrhea morbidity in Arizona (Figure GC 5).



When gender-based counts and rates are apportioned into age groups, disparities among males and females warrant further investigation (Figure GC 6). In 2013, reported infection counts and rates were higher among females in the high morbidity age range of 15-29 than among males in the same age range. In particular, the reported infection rate among adolescent females aged 15-19 was nearly double that of males aged 15-19 (323.5 vs. 179.3 cases per 100,000 persons, respectively) in 2013. Though the high morbidity age range represents a large majority of cases for both males and females (62.7% and 76.2% of reported cases, respectively), there is a large enough proportion of reported infections among males aged 30 and above to reverse the gender trend of female concentrated morbidity observed among 15-29 year olds.

Rates by Age:

As previously indicated, age-based disparities also persist in Arizona (Figure GC 7). Reported infections and infection rates remain highest among the high morbidity age range of 15-29 year olds, representing 69% of all Arizona cases in 2013, and an average of 73.2% of all reported cases from 2009 to 2013. Contrary to trends observed in the high volume of cases contributed by 15-29 year olds, the largest percent increases in case count have been observed in older age ranges. Adults aged 30-49 years experienced between 103% and 152% increases in case counts from 2009-2013, and contributed their largest share of reported infections in 2013 (26.1% in 2013 vs. 23.0% in 2009).



Rates by Race/Ethnicity:

Racial/ethnic differences in reported case counts and rates are also indicative of a disease burden disparity in Arizona (Figure GC 8). While roughly 28.6% of all 2013 reported infections were reported among Hispanics, the highest infection rates were observed among Blacks and American Indians (362.4 and 227.7 cases per 100,000 persons, respectively). It is also important to note that 1,495 (23%) of all reported infections had no indicated race or ethnicity, and while this group does include persons of mixed, other and unknown race/ethnicity, the true size of this group of Arizonans has not been calculated. Blacks and Asians/Native Hawaiians saw decreases in case counts and rates from 2012 to 2013, while all other groups, including those of unknown race/ethnicity, saw increases in the same timeframe.

The greatest increases in case count and rate from 2012 to 2013 were observed among American Indians (count and rate increases of 23%, respectively), though this group accounted for 9.7% of all reported infections. American Indians have generally observed the largest increases in gonorrhea from 2009 to 2013, which may be due in part to the promotion of preventive screening of asymptomatic patients at many IHS facilities. With gonorrhea infection being largely asymptomatic in males and females, screening programs greatly assist in identifying unknown/unsuspected infection. Infections among Native Americans were also unique in that the number of reported infections, as well as the reported infection rates among females was double that of males across all age groups in the high morbidity age range of 15-29. Thus females bore the burden of disease for this group.

While the number and rate of infections among Blacks has slightly increased from 2009 to 2012, there was a decrease in both case count and case rate from 2012 to 2013 (decrease of 5%, respectively). Though the rate of infection remains highest among this group, the percent contribution to overall Arizona gonorrhea morbidity has decreased to 16% in 2013, from a group high of 25.7% in 2009.

Primary and Secondary Syphilis

Syphilis is an STD caused by the bacterium, *Treponema Pallidum*. CDC estimates that 55,400 persons in the U.S. are infected with syphilis annually. In 2013, 16,663 cases of primary and secondary (P&S) syphilis were reported to CDC. This corresponds to a rate of reported P&S syphilis in the U.S. of 5.3 cases per 100,000 population.

Symptoms of primary syphilis are characterized by a painless lesion (a sore, an ulcer or chancre) at the site of infection. If left untreated, this lesion will be followed by secondary symptoms (rashes, mucous membrane lesions, or alopecia). Syphilis is often known as the great imitator as the rashes it causes may appear similar to other skin infections including allergic reactions and chicken pox. Late manifestations of untreated syphilis include blindness, dementia, damage to internal organs and possibly death. CDC recommends that all persons with symptoms be examined and all pregnant women be routinely tested. Any sexually active person at risk for acquiring syphilis should discuss their risks with a health care provider who can determine if testing is recommended.

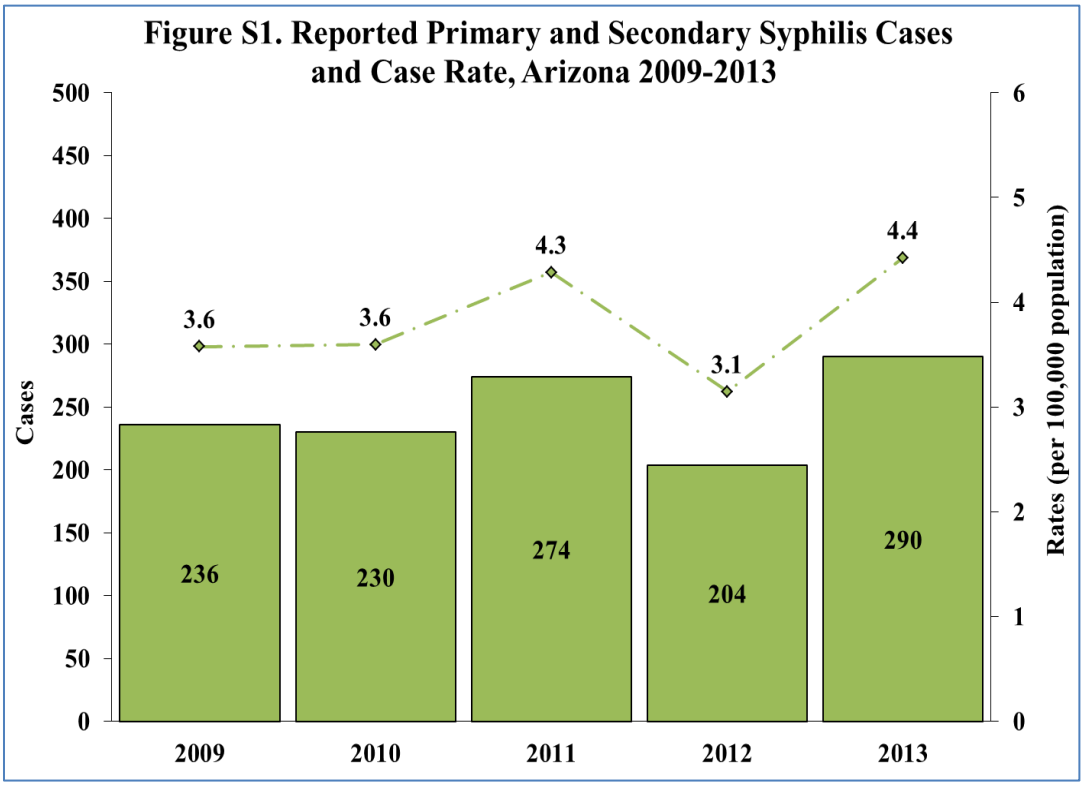
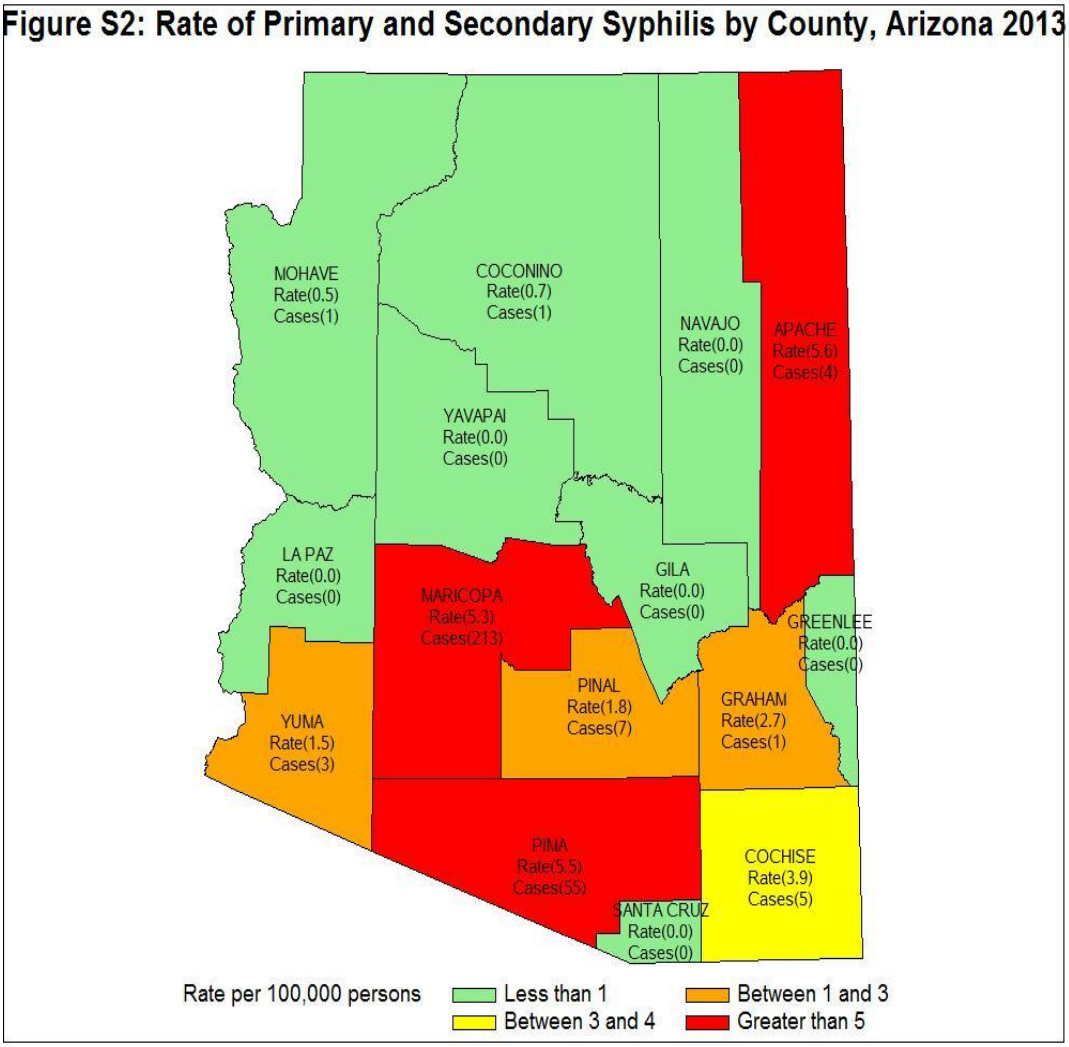
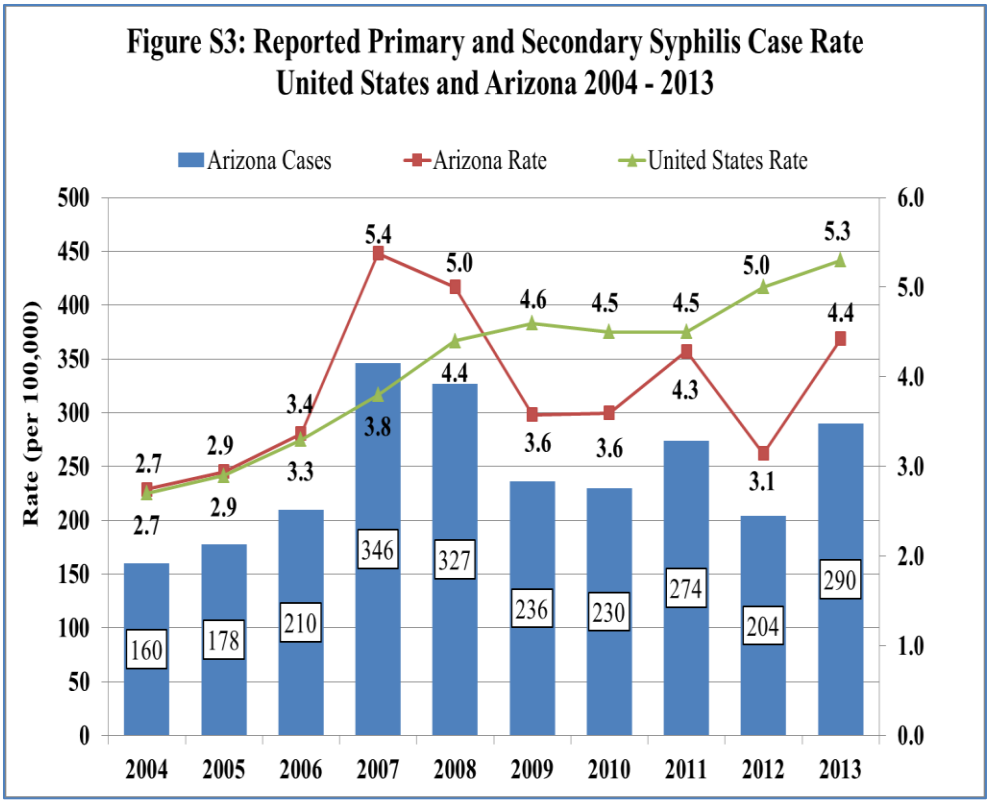


Figure S2: Rate of Primary and Secondary Syphilis by County, Arizona 2013



Statewide Disease Burden:

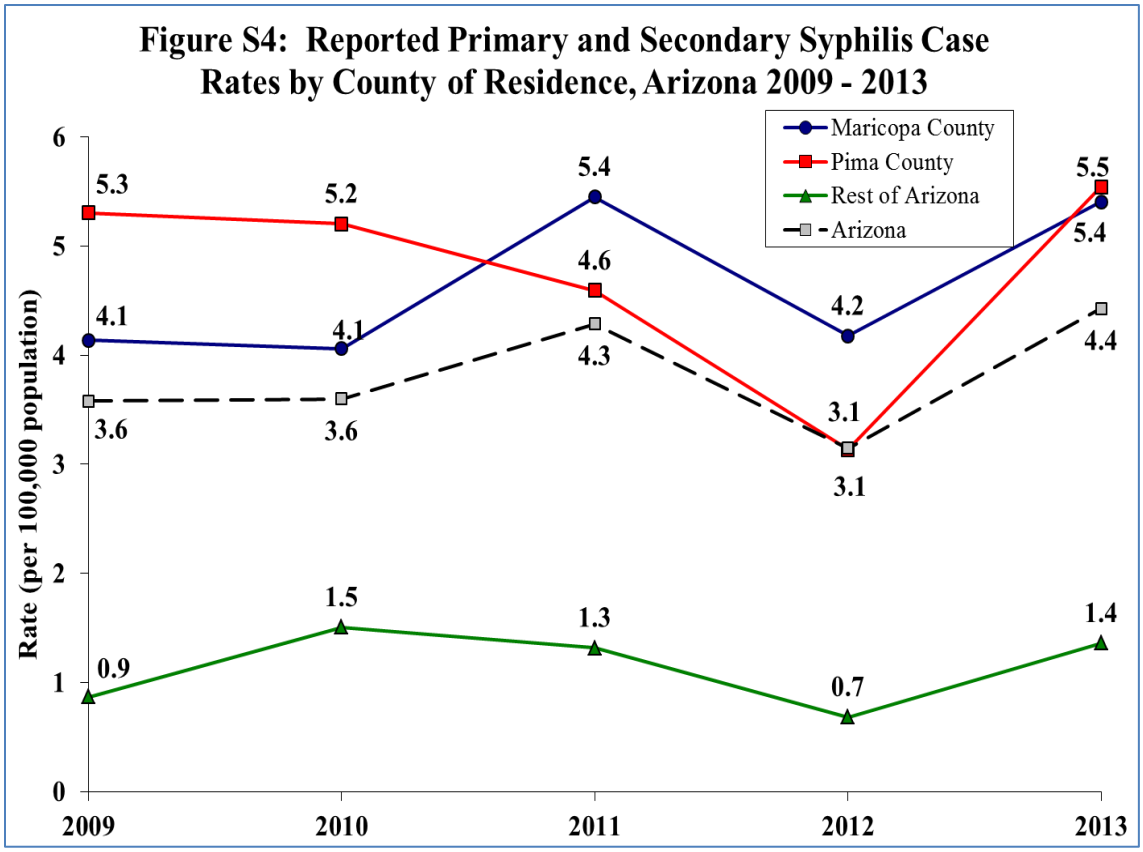
In 2013, the number of reported P&S syphilis cases in Arizona reached a five year high with 290 reported cases (Fig. S1). This increase in reported cases corresponds to a 23% increase in reported cases since 2009 and a 42% increase compared to 2012. In the previous 10 years, the highest number of P&S syphilis cases reported was 346 in 2007 (Fig. S3). Apache, Maricopa and Pima County reported the highest rates of P&S syphilis in 2013. Due to the small population of Apache County, even the 4 cases of P&S syphilis that were reported in 2013 can result in a high rate of P&S syphilis. Maricopa and Pima County have traditionally reported high rates of P&S syphilis in Arizona.



Ten Year Trend:

Since 2004, the rate of reported primary and secondary (P&S) syphilis cases in Arizona has been relatively similar to the rate reported for the U.S. Beginning in 2009, the rate of P&S syphilis in Arizona has been less than the rate for the U.S. In 2013, the rate of P&S syphilis for the U.S. was 5.3 cases per 100,000 population and Arizona reported a rate of 4.4 per 100,000. While the U.S. as a whole has experienced a steady increase in rate over the past decade, the rate in Arizona has displayed more year to year fluctuations. However, the rate for both the U.S. and Arizona is greater in 2013 that it was in 2004 (Fig S3). During this timeframe, the U.S. experienced a 96% increase in the rate of P&S syphilis and Arizona experienced a 63% increase.

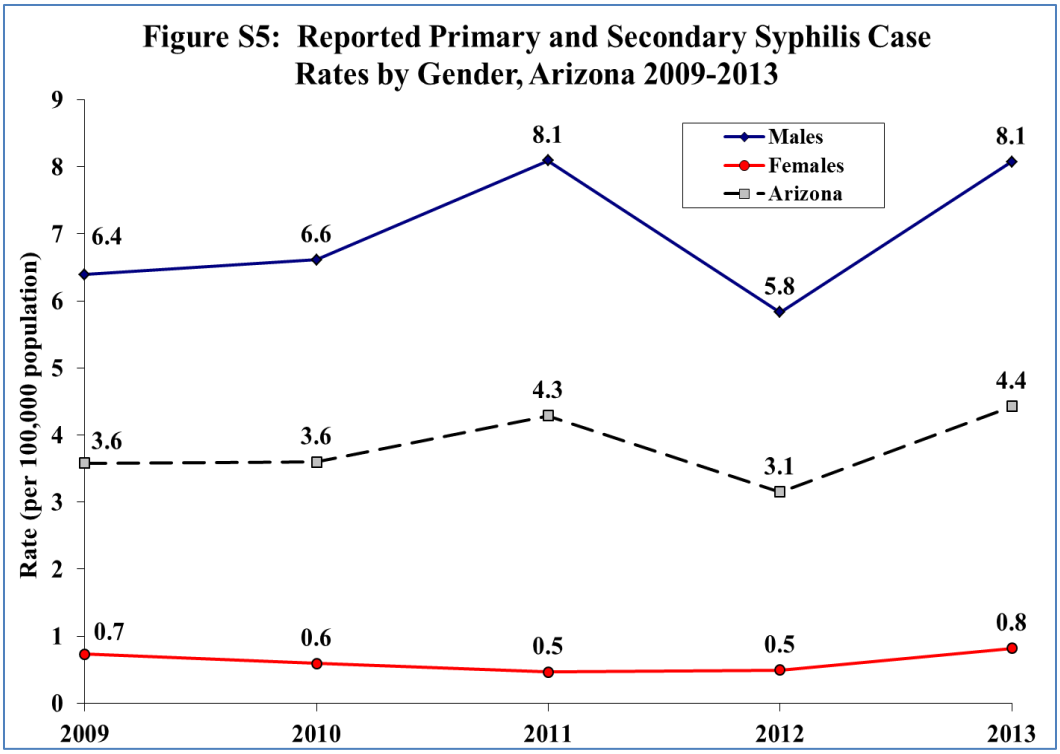
The large increase in P&S syphilis cases reported in 2013 resulted from an increased number of cases reported by Maricopa and Pima Counties. Both counties reported higher numbers of P&S syphilis cases among males in 2013 (192 cases) compared to 2012 (150 cases). In addition, over 78% of these males identified as MSM in 2013.



Rates by County:

Maricopa County and Pima Counties, the two most populous of Arizona's 15 counties, accounted for approximately 92% of all P&S syphilis cases reported in 2013. Over the previous five years this number has ranged between 89% and 95%. Maricopa County recorded 162 cases of P&S syphilis in 2012 and 213 in 2013. As a result of this increase, the P&S syphilis rate in Maricopa County increased by 29% (4.2 cases per 100,000 population in 2012 and 5.4 in 2013) (Fig. S4). Pima County recorded 31 cases of P&S syphilis in 2012 and 55 in 2013. This marked the first year-to-year increase in reported cases in Pima County since 2006-2007. From 2012 (3.1 per 100,000) to 2013 (5.5 per 100,000) the rate of reported P&S syphilis in Pima County increased by 77%.

Outside of Maricopa and Pima Counties, the number of reported P&S syphilis cases increased from 11 in 2012 to 22 in 2013. The largest increases were seen in Cochise and Pinal Counties.



Rates by Gender:

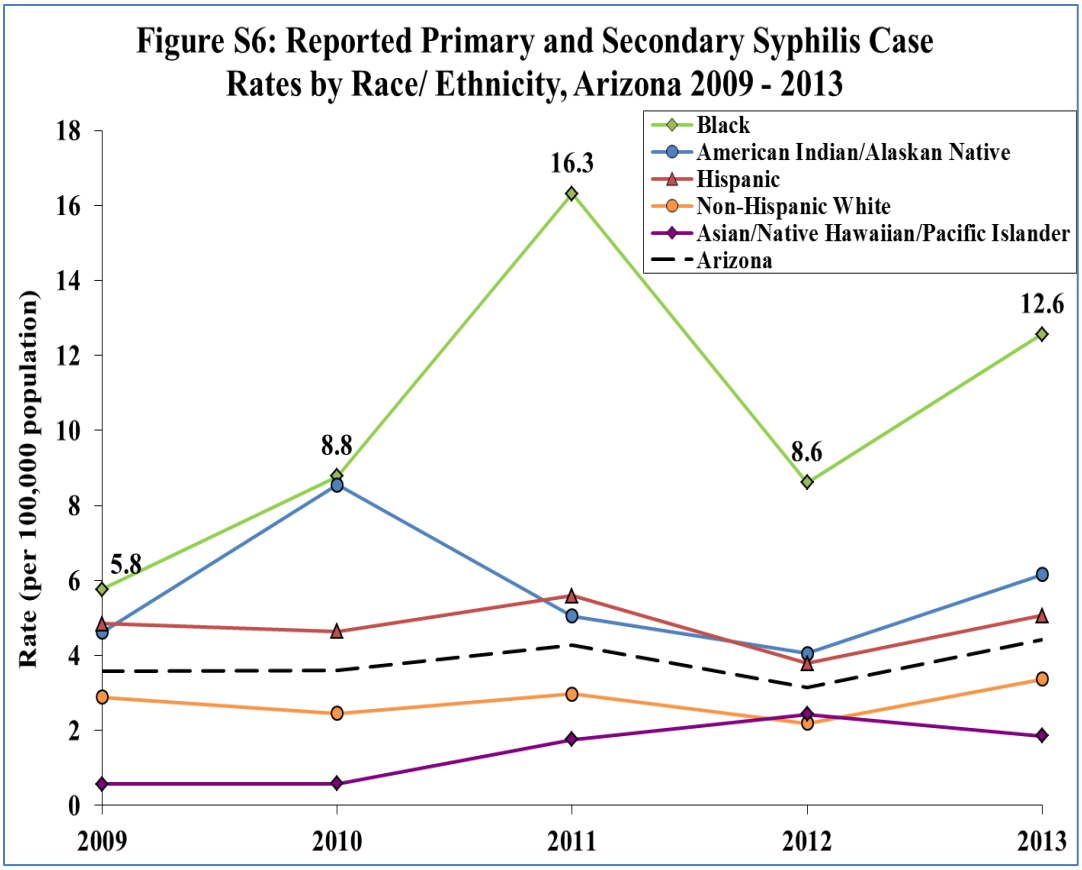
The increase in P&S syphilis cases in 2013 was seen mostly among males. In 2012, 188 male cases of P&S syphilis were reported while 263 were reported in 2013. This represents an increase of 40% among males. Among females, the case count increased from 16 in 2012 to 27 in 2013. Additionally, the rate of reported P&S syphilis among females in 2013 (0.08 cases per 100,000 population) in Arizona represents a five year high. The rate of P&S syphilis was 10.1 times higher in males compared to females. Since 2010, the P&S syphilis rate disparity between men and women in Arizona has been greater than 10 fold. As the majority of P&S syphilis cases continue to be diagnosed among MSM, this disparity is likely to persist (Fig S5).

Table S1. Reported Primary and Secondary Cases and Case Rate per 100,000 Population by Age Group, Arizona 2011 - 2013*						
	2013		2012		2011	
Age group	n	Rate	n	Rate	n	Rate
10-14	0	0.0	0	0.0	0	0.0
15-19	12	2.7	15	3.3	17	3.7
20-24	71	15.0	48	10.4	63	14.0
25-29	52	11.7	26	5.9	55	11.8
30-34	45	10.4	33	7.7	34	8.2
35-39	21	5.2	16	3.9	30	6.5
40-44	25	5.9	16	3.9	31	6.9
45-49	27	6.6	28	6.7	20	4.7
50-54	19	3.5	11	2.6	12	2.6
55-59	14	0.1	8	2.1	3	1.1
59-64	3	0.0	2	0.5	4	0.9
65+	1	4.4	1	0.1	5	0.5
Total	290	4.4	204	3.1	274	4.1
Percent under 30	47%		44%	-	49%	-
Percent Under 40	69%		68%	-	73%	-

*Ages 0-9 not shown, Arizona rate reflects all ages.

Rates by Age:

Overall, the age groups 20-24, 25-29, 30-34, 35-39, and 40-44 experienced an increase in reported P&S cases in 2013 compared to 2012 (Table S1). Also, individuals less than 30 years of age accounted for approximately 47% of all P&S syphilis cases reported in 2013 compared to 44% in 2012. Previously, those under 30 accounted for 49%, 41% and 40% in 2011, 2010, and 2009, respectively. Since 2010, the age group 20-24 has accounted for both the highest number of reported P&S syphilis cases as well as the highest P&S syphilis rate among the age groups displayed.



Rates by Race:

Historically, the highest rates of P&S syphilis in Arizona have been observed among Blacks. This trend continued in 2013 as Blacks in Arizona experienced the greatest increase in the rate of P&S syphilis for the years 2012-2013. In 2013 Blacks experienced a case rate of 12.6 cases per 100,000 population compared to 8.6 per 100,00 in 2012, a 47 percent increase in the case rate (Figure S6). Among the other race groups, American Indians/Alaskan Natives, Non-Hispanic Whites and Hispanics all experienced increases in the rate of P&S syphilis.

Figure S7. Reported Primary and Secondary Syphilis Case among Males and the Percentage of Male Cases that Self-Identify as Men who Have Sex with Men (MSM), Maricopa and Pima Counties, 2009-2013

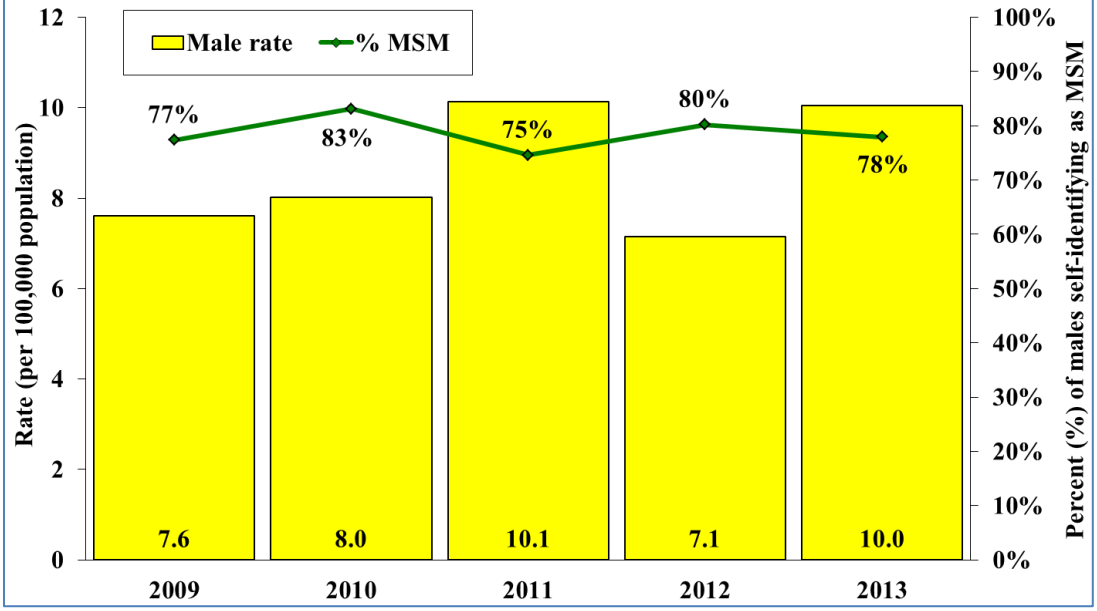
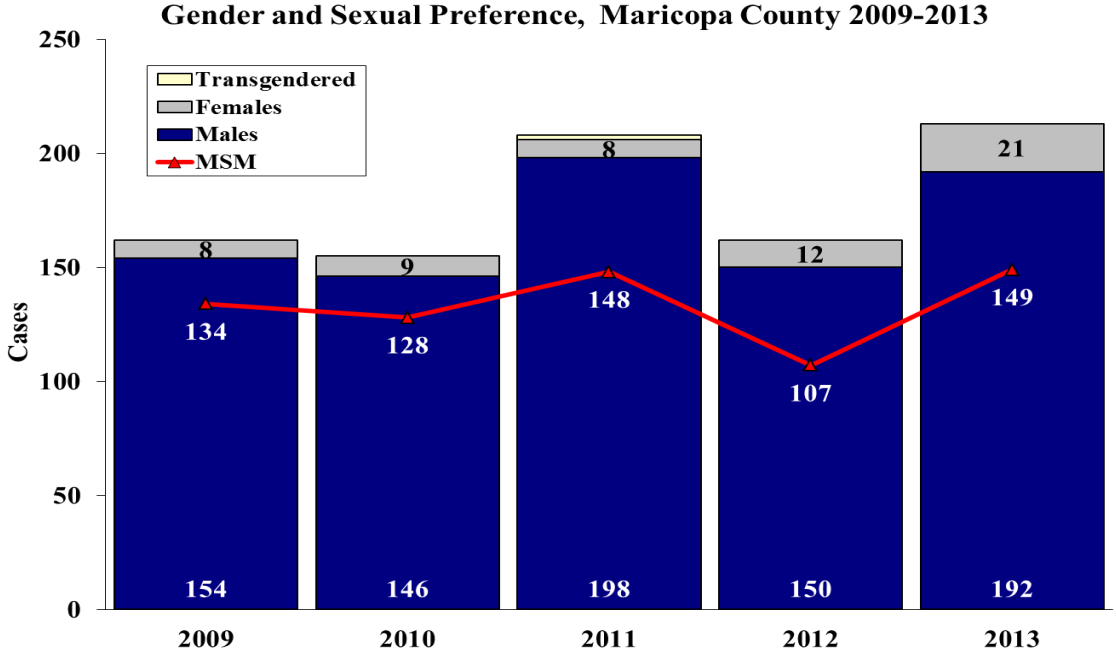
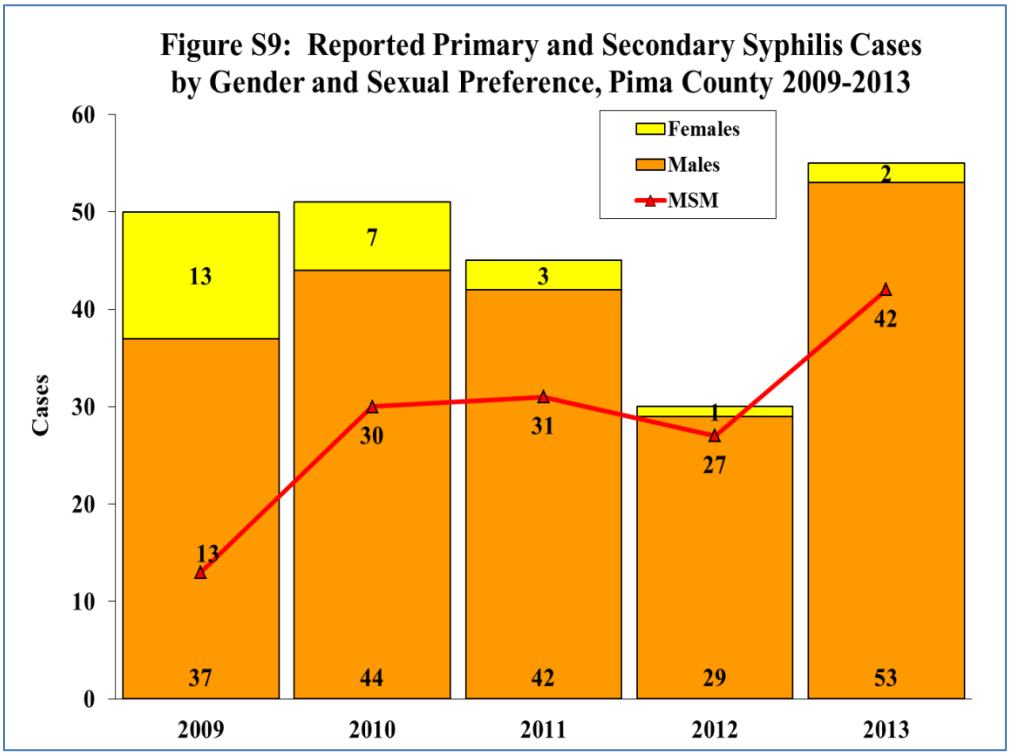


Figure S8: Reported Primary and Secondary Syphilis Cases by Gender and Sexual Preference, Maricopa County 2009-2013





Rates by Sexual Preference:

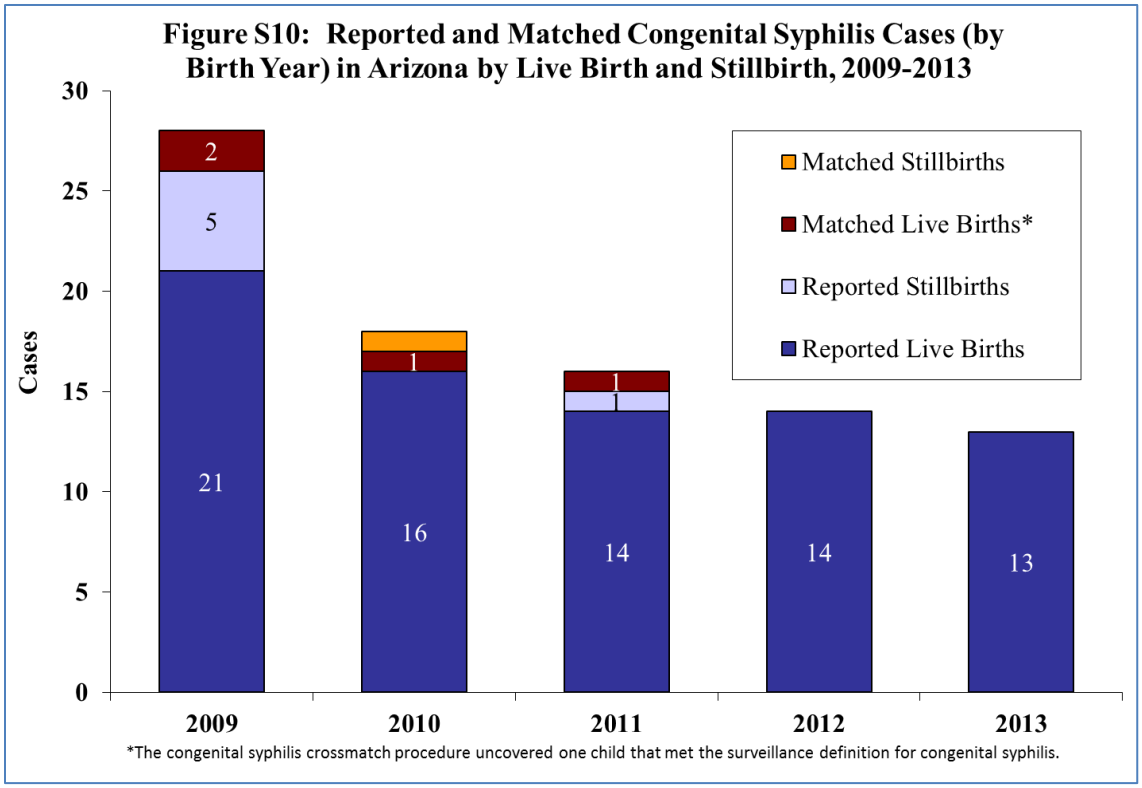
MSM make up a large percentage of reported P&S syphilis cases in Arizona. Since 2009 MSM have accounted for over 75% of all male cases reported from Maricopa and Pima Counties (Fig. S7.). The rate of P&S syphilis in men in these two counties has increased by 32% since 2009. Additionally, for the last 5 years, the rate of P&S syphilis among men in these two counties has been greater than the rate among men in Arizona overall. This can be seen by comparing Figures S5 and S7.

Looking at Maricopa County separate from Pima County we can see that since 2007, at least 65% of male P&S syphilis cases reported in Maricopa County self-reported as MSM. And since 2008 at least 70% of male P&S syphilis cases reported in Maricopa County self-reported as MSM. Also, the number of reported P&S syphilis cases among men that self-reported as MSM in Maricopa County reached a 5 year high (149 cases) in 2013 (Fig. S8). Unlike Maricopa County, Pima County did not see large percentages of MSM P&S syphilis cases until 2010. Since that time, reported P&S syphilis cases among self-reported MSM has been greater than 65% of all male cases. In 2013, 42 cases of P&S syphilis were reported among MSM in Pima County (Fig. S9). This is approximately 3.2 times the number that was reported in 2009.

Congenital Syphilis

Mother to infant syphilis transmission (congenital syphilis) can occur transplacentally and can occur at any time during pregnancy. The complications of congenital syphilis can include low birth weight, infant disorders such as deafness, bone disorders, failure to thrive, premature delivery, and still birth. With early detection and treatment (initiated at least 30 days before delivery) of maternal infection, congenital syphilis can be prevented.

In the U.S. the total number of congenital syphilis cases has dropped every year from 2008 through 2012 (2013 numbers have not yet been published). In 2012, 322 cases of congenital syphilis were reported nationwide. This corresponds to a rate of 7.8 per 100,000 live births. Thirteen cases of congenital syphilis and zero cases of syphilitic stillbirth were reported in 2013 in Arizona (Fig. S10). The number of reported cases has either decreased or stayed the same from year to year since 2008 (44 reported cases). This is the lowest number of reported cases since 2001 and has resulted in a 70% decrease in the number of cases since 2008 (44 cases reported). Since the number of reported cases of P&S syphilis is usually associated with the number of statewide syphilis cases among women, it is interesting to note that despite the year to year increase in P&S syphilis cases among women (16 cases in 2012 and 27 cases in 2013), the number of congenital syphilis cases decreased during this time frame.



Conclusion

As detailed in this report, STDs affect people of all ages, races, ethnicities, educational levels, and economic status. In 2013, young adults ages 15-29 and men who have sex with men bore a disproportionate burden of STDs in Arizona. The ADHS STDCP is addressing these health disparities by collaborating across ADHS programs and reaching out to county and tribal health departments, community based organizations, the Indian Health Service, the Centers for Disease Control and Prevention, and countless Arizona medical providers to promote STD prevention and intervention statewide. In pursuit of the mission of the ADHS STDCP, this report provides useful and pertinent data to the Arizona public and community leaders to promote dialogue about sexual health and disease prevention, to promote screening, medical treatment and services, and to improve the sexual health of all Arizonans. Sexual health is everyone's responsibility.